

REMARKS

This is a full and timely response to the outstanding non-final Office Action mailed June 23, 2004. Claims 1, 3-13, 15-28, 30-40, 42-47 are currently pending. Claims 2, 14, 29, and 41 have been cancelled without prejudice, waiver, or disclaimer. Claims 1, 3, 13, 15, 25, 33-37, and 47 have been amended. Reconsideration and allowance of the application and pending claims are respectfully requested.

I. Oath/Declaration Informalities

The Office Action instructs the Applicant as to an informality present in the oath/declaration. In particular, the Office Action alleges the following:

Applicant has not given a post office address anywhere in the application papers as required by 37 C.F.R. 1.33(a) of the second inventor, Rahul Magoon, which was in effect at the time of filing of the oath or declaration. A statement over applicant's signature providing a complete post office address is required.

Applicant has included with this response a declaration with the undersigned attorney's signature showing the correction for the post office address as instructed.

II. Allowable Subject Matter

Applicant appreciates the Examiner's indication that claims 5, 7-9, 17, 19-21, 29, 31-33, 41, and 43-44 would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims.

In that it is believed that every rejection has been overcome, it is respectfully submitted that each of the claims that remains in the case is presently in condition for allowance.

III. Claim Objections

According to the Office Action, various informalities have rendered claims 45-47 objectionable. In particular, the Office Action alleges the following:

Re claim 47, this claim should depend on claim 45 for consistency because it is a duplicated claim of claim 36. In addition, the set of claims 37-47 is method claims of set of claims 25-36, but claims 45-46 are not in order as set. Appropriate correction is required.

In response to the objection, Applicant has amended claims 33-36 to provide consistency between corresponding system and method claims. In view of the above-noted claim amendments, Applicant respectfully submits that the claims are not objectionable and respectfully requests that the objection be withdrawn.

IV. Specification Amendments

Various amendments have been made to the specification through this response to correct typographical and grammatical errors, and to provide a correct and accurate description of Applicant's invention as originally disclosed. Although these amendments effect several changes to the specification, it is respectfully asserted that no new matter has been added.

V. Claim Rejections - 35 U.S.C. § 103(a)

A. Statement of the Rejection

Claims 1-47 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Keating* (U.S. Pat. No. 5,867,068) in view of *Wong* (U.S. Pat. No. 5,425,074). Applicant respectfully traverses this rejection.

B. Applicant's Independent Claims

As provided in Applicant's independent claims 1, 13, 25, and 37, Applicant claims:

1. A signal processing system configured to produce a divider output signal, the system comprising:

a plurality of storage elements;

where each of the plurality of storage elements is configured to receive a first input, a second input, and a reference input signal, and is configured to provide a storage element output;

where a divider output signal is obtained from at least one storage element output;

where a storage element output from each of the plurality of storage elements is used to provide at least one input to another one of the plurality of storage elements; and

where an output from each of the plurality of storage elements is responsive to an output from at least another one of the plurality of storage elements,

where the divider output signal has a period substantially equal to a period of the reference input signal multiplied by a frequency division ratio, where the frequency division ratio is equal to a total number of the plurality of storage elements.

13. A method for producing a frequency divider output signal, comprising: configuring each of a plurality of storage elements to receive a first input, a second input, and a reference input signal, and to provide a storage element output;

obtaining a divider output signal from at least one of the storage element outputs, ***the divider output signal having a period substantially equal to a period of the reference input signal multiplied by a frequency division ratio, the frequency division ratio being equal to a total number of the plurality of storage elements;*** and

using a storage element output from each of the plurality of storage elements as an input to another one of the plurality of storage elements.

25. A signal processing system configured to produce a divider output signal having a period substantially equal to three times a period of a reference input signal, the signal processing system comprising:

- a first storage element;
- a second storage element;
- a third storage element;

where each of the three storage elements is configured to receive a first input, a second input, and a reference input signal, and is configured to provide a storage element output;

where the divider output signal is obtained from at least one storage element output; and

where a storage element output from each of the three storage elements is used to provide at least one input to another one of the three storage elements, *where a phase difference between the output of the first storage element and the output of the second storage element is substantially equal to 60°*.

37. A method for producing a frequency divider output signal having a period substantially equal to three times a period of a reference input signal, comprising:

configuring each of three storage elements to receive a first input, a second input, and a reference input signal, and to provide a storage element output;

obtaining the divider output signal from at least one storage element output; and

using a storage element output from each of the three storage elements as an input to another one of the three storage elements, *where a phase difference between the output of the first storage element and the output of the second storage element is substantially equal to 60°*.

C. Discussion of the Rejection

As has been acknowledged by the Court of Appeals for the Federal Circuit, the U.S. Patent and Trademark Office ("USPTO") has the burden under section 103 to establish a proper case of obviousness by showing some objective teaching in the prior art or generally available knowledge of one of ordinary skill in the art that would lead that individual to the claimed invention. See *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Accordingly, to make a proper case for obviousness, there must be a prior art teaching or established knowledge that would suggest to a person having ordinary skill in

the pertinent art to fill the voids apparent in the applied reference. It is respectfully asserted that no such case has been made in the outstanding Office Action.

Independent Claim 1

With regard to original claims 1 and 2, features of which are included in amended independent claim 1, the Office Action alleges the following:

Re claim 1, Keating discloses in Figures 11-12 a signal processing system configured to produce a divider output signal (1130) having a period substantially equal to a period of reference input signal multiplied (1110) by a frequency division ratio (e.g. $1/2$) comprising: a plurality of storage elements (1140 and 1150), where each of the plurality of storage elements is configured to receive a first input (e.g. 1180), and the reference input signal (1110), and is configured to provide a storage element output (D), where the divider output signal is obtained from at least one storage element output (1130); where a storage element output from each of the plurality of storage elements is used to provide at least one input to another one of the plurality of storage elements (cascade to next as 1140 to 1150); and where an output from each of the plurality of storage elements responsive to an output from at least another one of the plurality of storage elements (1130). Keating fails to disclose a second input signal to each of the storage element. However, Wong discloses in Figure 5 that each of the storage element has a second input signal (e.g. $49 \times R$ as reset). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add a second input signal as reset as cited in Wong's Figure 5 into Keating's invention because it would enable to stabilize the system by resetting machine state.

Re claim 2, Keating further discloses in Figures 11-12 the frequency division ratio (e.g. $R=2$) is equal to a total number of storage elements (1140 and 1150 as two elements) included in the plurality of storage elements (see Figure 12 for 1110 and 1130).

Applicant respectfully submits that neither *Keating* nor *Wong*, alone or in combination, discloses, teaches, or suggests the limitations “*where the divider output signal has a period substantially equal to a period of the reference input signal multiplied by a frequency division ratio, where the frequency division ratio is equal to a total number of the plurality of storage elements,*” as recited in independent claim 1. The period for

the divider output signal (1130) as shown in Fig. 12 of *Keating* is either 4 times the reference signal (1110) or 5 times the reference signal. However, contrary to the Office Action's position, the amount of storage elements in the circuit of Figure 11 is three. To meet the emphasized claim limitations of claim 1, the amount of storage elements for the example shown in Figs. 11 and 12 would need to be four, which clearly is not the case.

Further, note that the assertion that there are only two storage elements ignores not only the clear teachings of Fig. 11, but also the supporting specification. For example, col. 7, lines 36-41 provide the following supporting description for Fig. 11 (with emphasis added):

FIG. 11 illustrates a conventional dual modulus prescaler configuration. The input clock 1110 is coupled to first, second and third flip-flops 1140, 1150, and 1160 respectively. The first, second and third flip-flops 1140, 1150, 1160 are also serially coupled and provided with a feedback path 1180 in order to provide a frequency divide value of 4 or 5.

In other words, the combination of all three flip flops provides the output signal desired. However, even assuming the statement that there are two flip flops is correct, which it is not, the emphasized claim language still is not met, since 4 or 5 storage elements would be required in the example given in Fig. 11 and 12, and 2 is not equal to 4 or 5. The addition of *Wong* does not remedy this deficiency. Thus, since the emphasized claim language of independent claim 1 is not disclosed, taught, or suggested, Applicant respectfully requests that the rejection to claim 1 be withdrawn.

Because independent claim 1 is allowable over *Keating* and *Wong*, Applicant respectfully submits that the corresponding dependent claims 3-12 are allowable as a matter

of law for at least the reason that dependent claims 3-12 contain all elements of their respective base claim. See, e.g., *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

Further note that Applicant respectfully traverses the finding of Official Notice taken with regard to claim 12, but for the reasons stated above, respectfully submits that the finding of Official Notice is rendered moot in light of the patentable distinctions over *Keating* in view of *Wong*.

Independent Claim 13

Applicant respectfully submits that neither *Keating* nor *Wong*, alone or in combination, discloses, teaches, or suggests the limitations “*the divider output signal having a period substantially equal to a period of the reference input signal multiplied by a frequency division ratio, the frequency division ratio being equal to a total number of the plurality of storage elements,*” as recited in independent claim 13. As described for similar limitations in claim 1, the period for the divider output signal (1130) as shown in Fig. 12 of *Keating* is either 4 times the reference signal (1110) or 5 times the reference signal. The amount of storage elements in the circuit of Figure 11 is three. To meet the emphasized claim limitations of claim 13, the amount of storage elements for the example shown in Figs. 11 and 12 would need to be four, which clearly is not the case. The addition of *Wong* does not remedy this deficiency. Thus, since the emphasized claim language of independent claim 13 is not disclosed, taught, or suggested, Applicant respectfully requests that the rejection to claim 13 be withdrawn.

Because independent claim 13 is allowable over *Keating* and *Wong*, Applicant respectfully submits that the corresponding dependent claims 15-24 are allowable as a matter of law.

Independent Claim 25

Applicant respectfully submits that neither *Keating* nor *Wong*, alone or in combination, discloses, teaches, or suggests the limitations “*where a phase difference between the output of the first storage element and the output of the second storage element is substantially equal to 60°*,” as recited in independent claim 25. As indicated above, the Office Action has stated that claim 29 (among other claims) would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant has incorporated the limitations of original claim 29 into independent claim 25, yet respectfully submits that including the intervening claims is not necessary for purposes of clarity or for purposes of overcoming the *Keating* and *Wong* references. Since the emphasized claim language of independent claim 25 is not disclosed, taught, or suggested in *Keating* and *Wong*, Applicant respectfully requests that the rejection to claim 25 be withdrawn.

Because independent claim 25 is allowable over *Keating* and *Wong*, Applicant respectfully submits that the corresponding dependent claims 26-28 and 30-36 are allowable as a matter of law.

Independent Claim 37

Applicant respectfully submits that neither *Keating* nor *Wong*, alone or in combination, discloses, teaches, or suggests the limitations, “*where a phase difference between the output of the first storage element and the output of the second storage element is substantially equal to 60°*,” as recited in independent claim 37. As indicated above, the Office Action has stated that claim 41 (among other claims) would be allowable if rewritten in independent form including all of the limitations of the base

claim and any intervening claims. Applicant has incorporated the limitations of original claim 41 into independent claim 37, yet respectfully submits that including the intervening claims is not necessary for purposes of clarity or for purposes of overcoming the *Keating* and *Wong* references. Since the emphasized claim language of independent claim 37 is not disclosed, taught, or suggested in *Keating* and *Wong*, Applicant respectfully requests that the rejection to claim 37 be withdrawn.

Because independent claim 37 is allowable over *Keating* and *Wong*, Applicant respectfully submits that the corresponding dependent claims 38-40 and 42-47 are allowable as a matter of law.

In summary, it is Applicant's position that a proper case for obviousness has not been made against Applicant's independent claims 1, 13, 25, and 37 (and corresponding dependent claims). Therefore, it is respectfully submitted that each of these claims is patentable over *Keating* and *Wong* and that the rejection of these claims should be withdrawn.

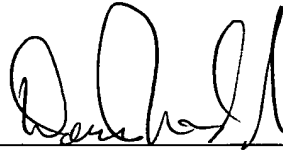
VI. Canceled Claims

As identified above, claims 2, 14, 29, and 41 have been canceled from the application through this Response without prejudice, waiver, or disclaimer. Applicant reserves the right to present these canceled claims, or variants thereof, in continuing applications to be filed subsequently.

CONCLUSION

Applicant respectfully submits that Applicant's pending claims are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

Respectfully submitted,



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